

The Food Landscape in Kitsap County, Washington

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Acknowledgements

The Food Landscape in Kitsap County assessment is based off of *The Food Landscape in Burien, Washington* report conducted in 2011 by the Urban Food Link, the Northwest Center for Livable Communities and SvR Design. Financial Support was made possible by the Health Equity Research Center, a strategic research initiative of Washington State University.

Purpose

This report is designed to better understand the existing food environment throughout the County so that future policies, systems, and environmental changes could be targeted specifically to increase access to healthy foods while reducing the presence of documented food deserts. Key questions guiding this research includes:

- On average, how far do residents have to walk to get to supermarkets or grocery stores that sell healthier food options, such as fruits and vegetables, whole grains, and low-fat dairy?
- On average, how far do residents have to walk to be able to use their food benefits, such as SNAP or WIC?
- Do youth (under 18) have access to healthy food options within ½ mile walking distance from their school?
- What is the ratio of healthy to unhealthy food options throughout the County?

Definitions

For the purposes of this report, the following definitions should be considered.

Food Access. The ability for an individual to be able to obtain food necessary for living a healthy life.

Food Desert. Areas of a community or a neighborhood that lacks healthy food sources and/or the ability to obtain healthy food.

Food Environment. The physical characteristics of a geographic area relating to accessing, processing, transporting, purchasing and eating food.

Healthy Food. Unprocessed foods within the category of dairy, produce, meat, fish, fruit, eggs, whole grains.

Food Insecurity. An uncertain ability or inability to procure food, inability to procure enough food, being unable to live a healthy life, and feeling unsatisfied.

Poverty Rate. The share of a population living with income at or below the Federal poverty thresholds by family size.

Methodology

This assessment looks at zip code and census tract level data to understand that current state of access to healthy food options throughout the County. Three main factors were used to understand this:

- Location and types of food retailers
- Proximity of food retailers to residential areas and schools
- Socio-economics of food choice

Map Production

All maps were created using ESRI Arc Maps Desktop 10.4.1.

Symbology

A wide range of symbology types are used to represent data visually. These symbology types fall into three major categories: polygons, lines, and points.

1. Polygons are used to note areas, here as either Kitsap ZIP Codes or buffer zones around a given point location. While the ZIP Code shapes reflect boundaries, the varying buffer shapes are the result of unique street-based walking distances rather than linear distances (as the crow flies).
2. Lines are used to depict distances between polygons and/or points. When possible, these routes are street-based walking distances (non-linear) to illustrate how one travels. A notable exception is when finding the distance from a point to the nearest polygon (see Nearest Supermarket to Residential Area Boundary). Here, a linear distance is calculated.
3. Points are used to represent the addresses of specific locations. Colored circular dots are widely used here to represent food retailers, though different shapes and filling indicate additional information as noted.

Suppression

The suppression rules used here seek to best balance data availability and the limitations imposed by the need for protection of confidentiality and statistical stability. Any areas where data is available but cannot be shown is denoted by black shading (see Map 1). Areas with no data are denoted by purple shading (see Map 8) or gray shading (see Map 10).

- General suppression applied to all data: Estimates based on counts of less than 10 were suppressed to protect confidentiality.
- Additional suppression applied to survey-based estimates (Adult BMI, Poverty Rates): Estimates with a relative standard error equal to or greater than 25% were suppressed to safeguard against statistical instability.

Maps

Interactive versions of these maps are publicly available at [ArcGIS](#). Note: A free ArcGIS online account is required to be set up to view dynamic maps.

#	TITLE
1	Overweight Adults (2012-2016), Kitsap County, WA
2	Location of Food Retailers and Current Land Use in Kitsap County, WA
3	Proximity to Supermarkets in Kitsap County, WA
4	Top 10% Population Density (2017) Census Tracts Proximity to Supermarkets in Kitsap County, WA
5	Distance from Schools to Nearest Convenience Stores and Supermarkets in Kitsap County, WA
6	Proximity of Food Retailers to Schools in Kitsap County, WA
7	Poverty Rates (2016) and Food Retailers in Kitsap County, WA
8	# of SNAP Clients (2017) by ZIP Code and SNAP Authorized Food Retailers in Kitsap County, WA
9	# of WIC Clients (2017) by ZIP Code and WIC Authorized Food Retailers in Kitsap County, WA
10	Top Population Density (2017) and Poverty Rate (2017) Census Tracts Proximity to Supermarkets in Kitsap County, WA

Key Findings of Kitsap County's Food Landscape

BMI is a countywide issue

- Overall county overweight rate (BMI 25-25.9) is 33.1%, obesity rate (BMI 30+), and overweight or obese (BMI 25+) 58.7%

There are 1.4 times more unhealthy food options than healthy ones

- There are 7 times as many convenience stores as supermarkets within 1/2 mile of Kitsap schools
- There are more fast food restaurants and convenience stores (171) than supermarkets, small groceries, specialty stores (bakery, meat/fish markets, etc.) farmers market, and fruit/vegetables stands (147), representing approximately 1.4 times as many unhealthy food options as there are healthy ones.
- With seven times as many convenience stores as supermarkets within ½ mile from residential land use zones, it far more likely that a resident frequents a convenience store where less-nutritious foods likely makes up a greater majority of food options.

Supermarket accessibility is an issue

- Only 21.75% of residential areas in the County are within a 2-mile buffer from a supermarket.
- Just one Kitsap census tract in the highest population density decile has a supermarket.
- The average distance from a supermarket to the boundary of a residential area is over 1/2 mile.
- The average walking distance from Kitsap schools to the nearest convenience store is 1.37 miles, compared to the average walking distance from Kitsap schools to the nearest supermarket is 1.86 miles.

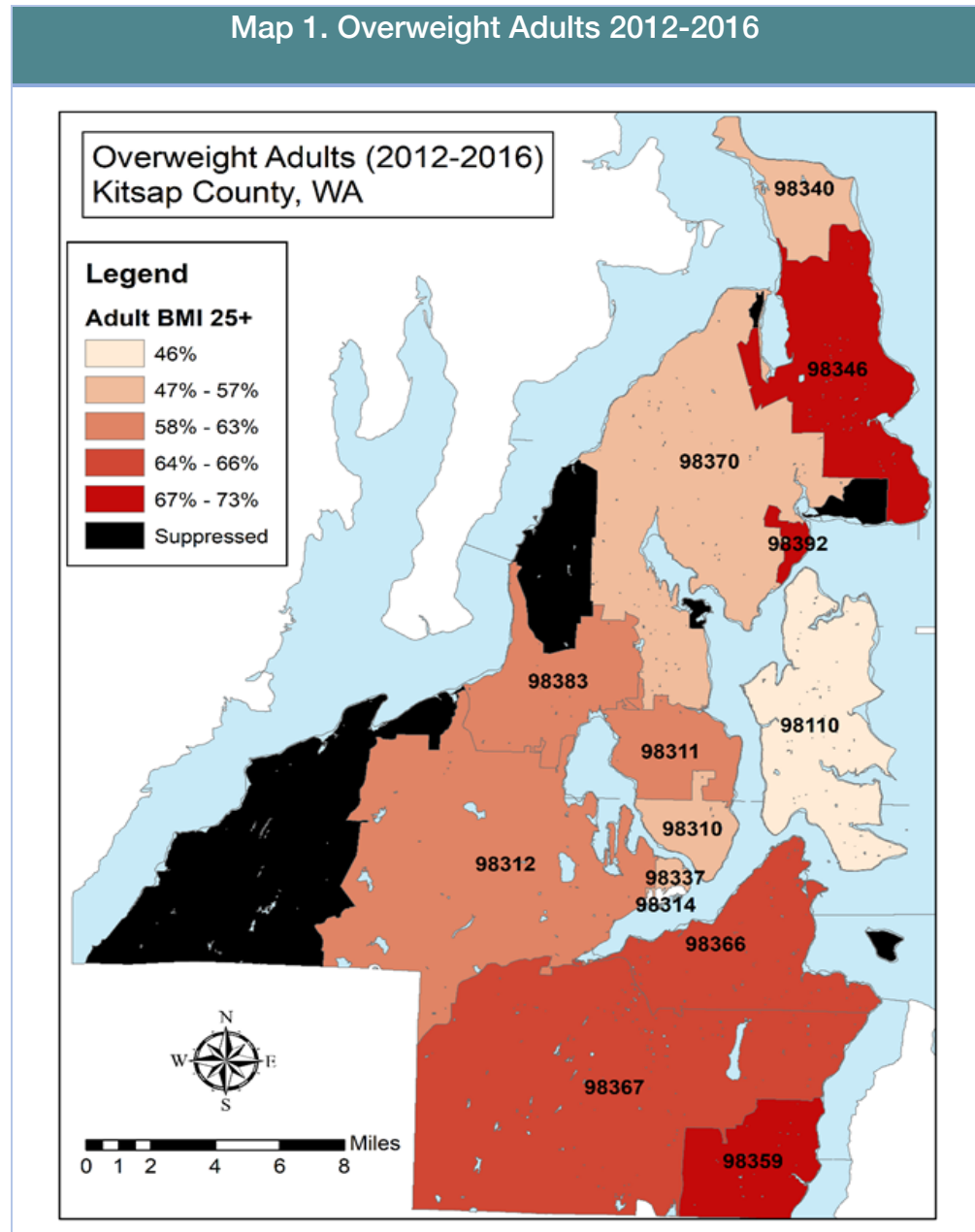
Kitsap's most economically disadvantaged residents are concentrated in areas where supermarkets are not located

- In order, the greatest concentration of SNAP and WIC clients live in 98312, 98366, 98310, 98311, and 98367.
- Zip codes with the highest concentration of WIC clients have the smallest number of authorized WIC retailers. Two of Bremerton's zip codes (98310, 98312) represent 33.3% of total WIC clients and has only 3 authorized WIC retailers within these zip codes. South Park Village in Port Orchard (98366) has 18% of total WIC clients and 5 authorized WIC retailers.
- None of the five census tracts where the highest decile for population density and poverty percent of people living below the 200% federal poverty level overlap has a supermarket.

Overweight Adults

The prevalence of overweight adults was mapped for 2012-2016 in 20 zip codes throughout Kitsap County using data from the Behavioral Risk Factor Surveillance System (BRFSS). The highest proportions of overweight adults for the five-year time span are in Suquamish (98392) at 73% and Olalla (98359) at 72%.

Map 1 shows that the next five highest proportions of overweight adults in Kitsap: Kingston (98346) at 69%, Port Orchard (98367) at 66%, Port Orchard / South Park Village (98366) at 65%, and Central Kitsap: Bremerton (98311) at 63% and Silverdale (98383) at 63%. The only city with a percentage of overweight adults below 50% was Bainbridge Island (98110) at 46%.



Location and Types of Food Retailers

Five categories of food retailers were mapped around the county, including supermarkets, grocery stores, convenience stores, specialty (bakery, meat market, seafood), and farmers markets. Kitsap County has 25 supermarkets, 86 groceries, 100 convenience stores, 49 specialty stores (bakery, meat market, seafood) and 7 seasonal farmers markets. There are additionally four tribal food establishments.

Food Retailer Type	Accepts SNAP ¹	Accepts SNAP & WIC ¹	Total	ACS BP 2015 ²
Supermarket	25	14	25	46
Grocery Store	60	2	86	66
Convenience Store	65	0	100	20
Specialty Store	40	25	49	24
Farmers Market	5	0	7	---
Fruit/Vegetable Stand	---	---	4	---
Tribal Establishment	0	0	4	---
Fast Food Restaurant	---	---	---	151
Total	195	41	271	357

To better understand the food landscape of Kitsap, one can compare the prevalence of generally unhealthy food sources (e.g. fast food restaurants) to healthy food options (e.g. supermarkets). One such method for this comparison is the calculation of a ratio called the Retail Food Environment Index (RFEI) (based on ACS BP 2015²). This score is calculated as follows:

$$\text{RFEI} = \frac{\text{Fast food restaurants} + \text{Convenience stores}}{\text{Supermarkets} + \text{Grocery Stores} + \text{Fruit/Vegetable stands} + \text{Farmers markets}}$$

$$\text{RFEI} = \frac{151 \text{ Fast food restaurants} + 20 \text{ Convenience stores}}{46 \text{ Supermarkets} + 66 \text{ Grocery Stores} + 4 \text{ Fruit/Vegetable stands} + 7 \text{ Farmers markets}} = \mathbf{1.39}$$

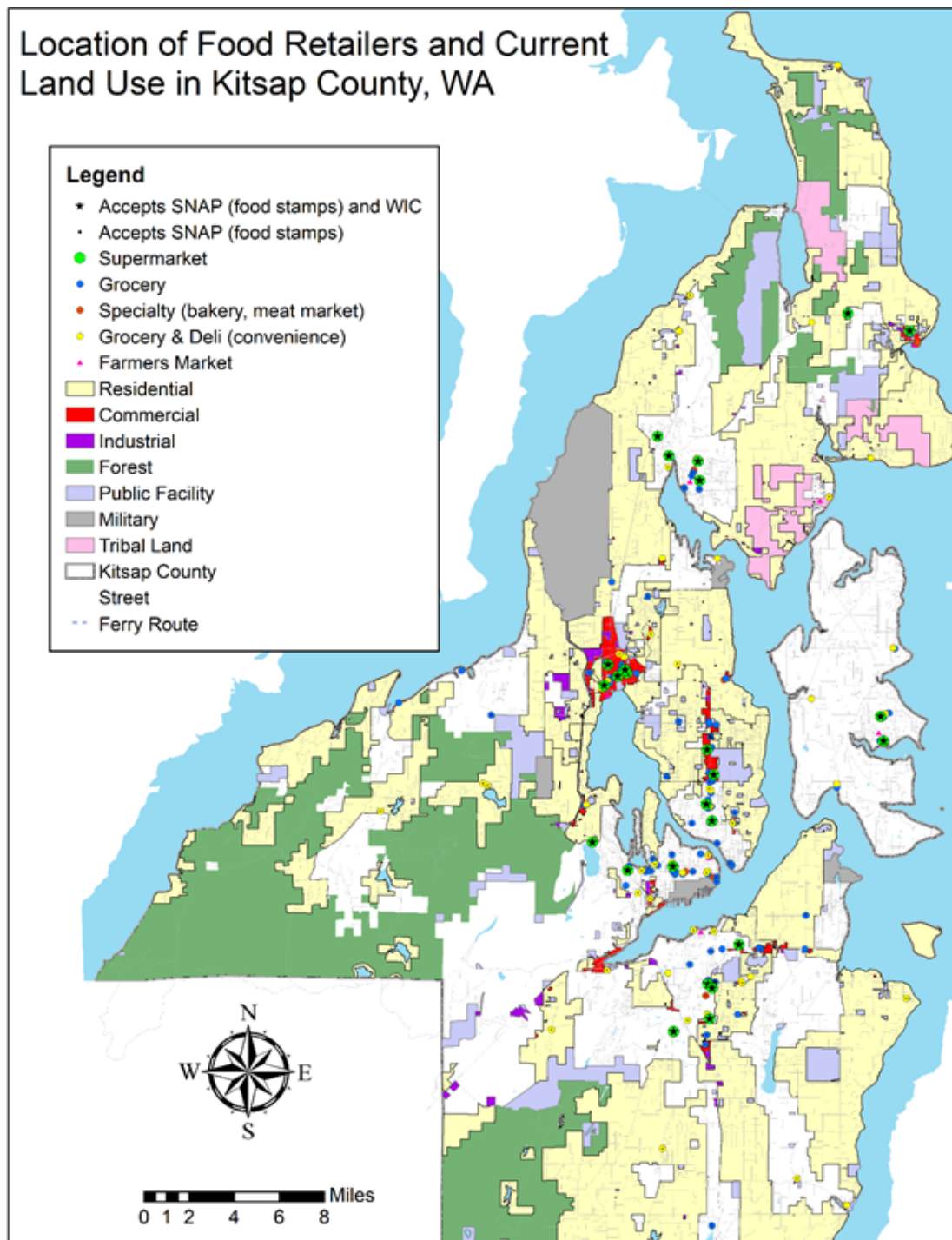
Interpreting this index score, there are approximately 1.4 times as many unhealthy food options as there are healthy ones.

¹ This data does not reflect food businesses that are unpermitted by Kitsap Public Health District or operating on military bases.

² American Community Survey Business Patterns, Farmers Market data from KPHD GIS

Map 2 depicts the locations of food retailers and current land use in Kitsap County. Dotted points represent retailers that accept Supplemental Nutrition Assistance Program (SNAP, formerly Food Stamps) and starred points represents retailers that accept both SNAP and Women, Infants, Children (WIC).

Map 2. Location of Food Retailers and Current Land Use in Kitsap County, WA



Note: Displayed food establishments include all those with KPHD public health permits.

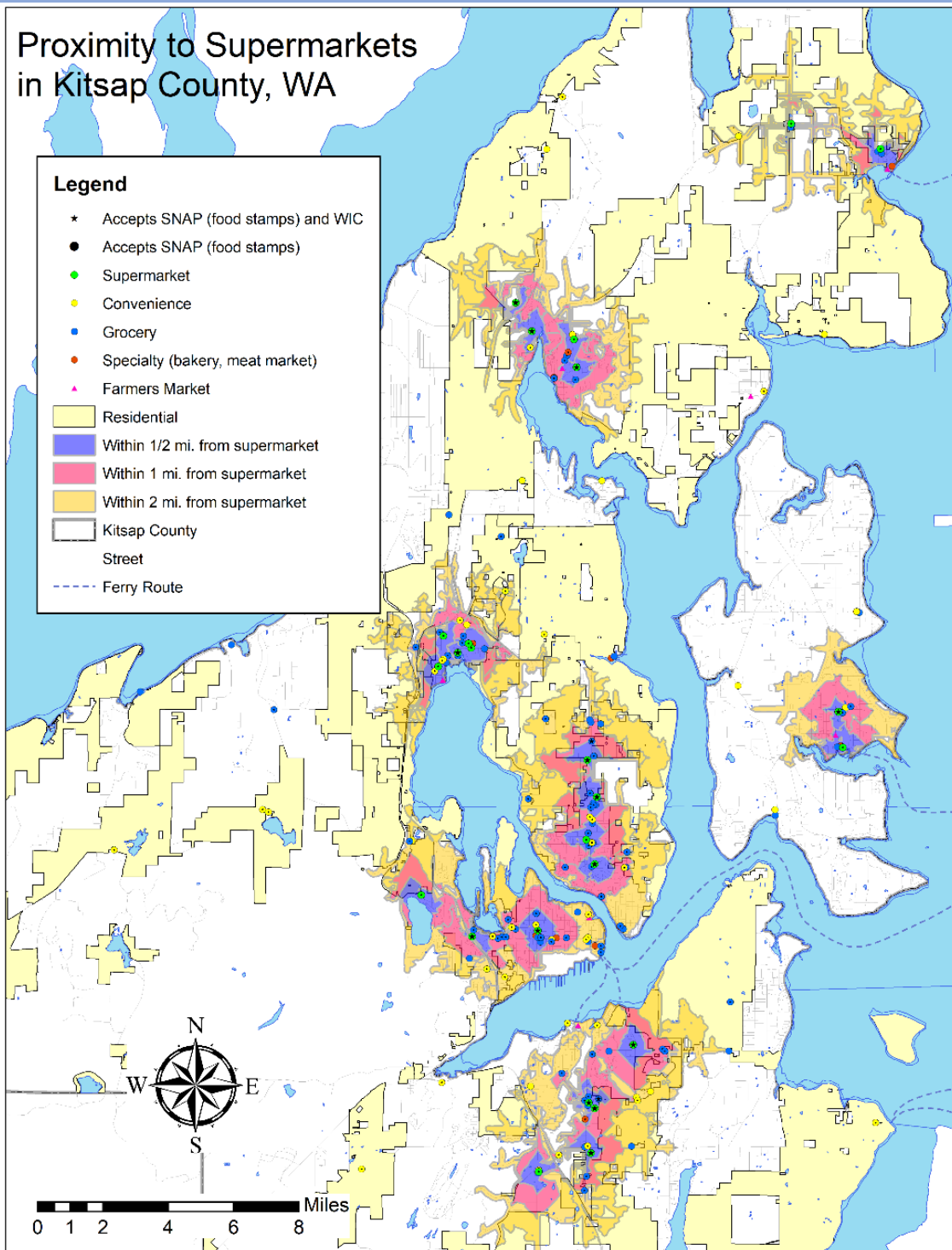
Proximity of Food Retailers to Residential Areas

Of Kitsap's 396.42 mi² total square land miles, residential areas cover 150.19 mi² (38% of total or 46% of total when excluding forest).

Kitsap County has 25 permitted supermarkets. Map 3 on the following page displays residential land areas overlaid by the coverage area provided by these Kitsap supermarkets. The total street-based distance around all 25 supermarkets is 6.76 mi² at one-half mile, 13.97 mi² at one mile, 32.66 mi² at two miles. If every surrounding square mile overlapped with a residential area, the two-mile buffer would allow for service to just (21.75%) of residential areas. Unfortunately, not a single supermarket lands within a residential area, a fact that may be unsurprising because of the way land use is classified.

The average straight-line distance (unable to calculate street-based walking distance when connecting to nearest polygon) for the 25 supermarkets to the nearest residential area boundary is 0.51 miles (greatest distance = 3.33 miles). Practically, this distance is longer because individuals must travel by streets. Less than half (1/2) of the supermarkets are one-quarter straight-line mile or closer to the nearest residential area boundary. Again, this number shrinks when considering that travel must be done by street.

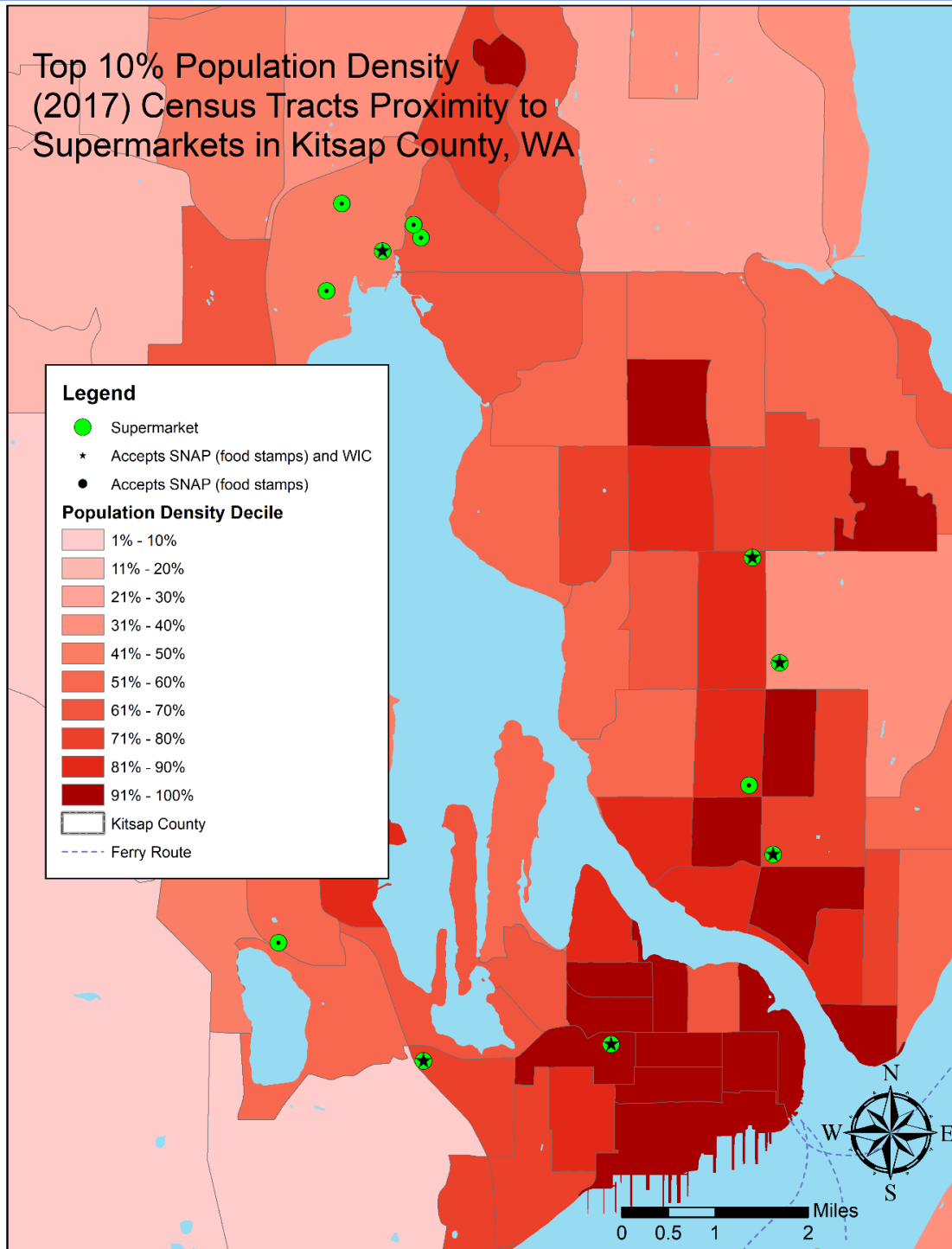
Map 3. Proximity to Supermarkets in Kitsap County, WA



Note: Displayed food establishments include all those with KPHD public health permits.

Map 4 emphasizes the highest Kitsap population density decile (90%+) census tracts overlaid by the locations of supermarkets. Among these 16 census tracts, just one has a supermarket.

Map 4. Top 10% Population Density (2017) Census Tracts Proximity to Supermarkets in Kitsap County, WA



Note: Displayed food establishments include all those with KPHD public health permits.

Proximity of Food Retailers to Schools

Map 5 on the following page depicts the distance between Kitsap schools and the nearest supermarket and convenience store.

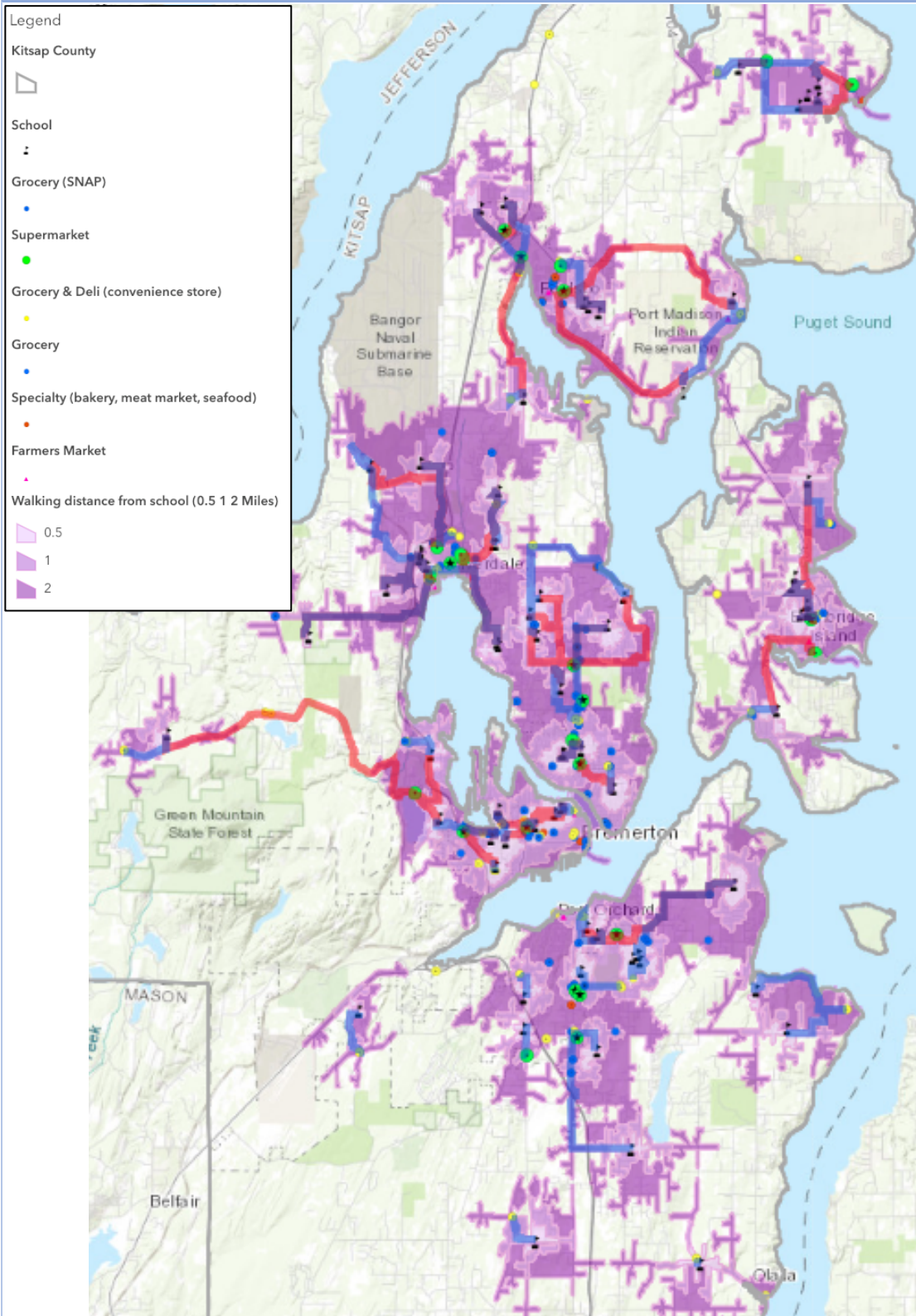
In Map 6, ½, 1, and 2-mile buffer zones are shown around Kitsap schools in light, medium, and dark purple, respectively. Street-based walking routes from each school to the nearest convenience store and supermarket are shown using blue and red lines, respectively. Supermarkets are the larger green points, while convenience stores are the smaller yellow ones. Schools are represented by flags.

Within ¼ and ½ mile of Kitsap schools, there are 8 (8%) and 27 (27%) convenience stores (e.g. 7-Eleven), respectively. The average walking distance (non-linear) from Kitsap schools to the nearest convenience store is 1.37 miles, with the shortest being 0.16 miles and the longest being 4.68 miles.

By contrast, the average walking distance (non-linear) from Kitsap schools to the nearest supermarket (e.g. Safeway) is 1.86 miles, with the shortest being 0.26 miles and the longest being 7.93 miles. While there are no supermarkets within ¼ mile of a school, there are just 5 (20%) supermarkets within ½ mile.

With seven times as many convenience stores as supermarkets within ½ mile, it far more likely that a resident frequents a convenience store where less-nutritious foods make up a greater majority of food options.

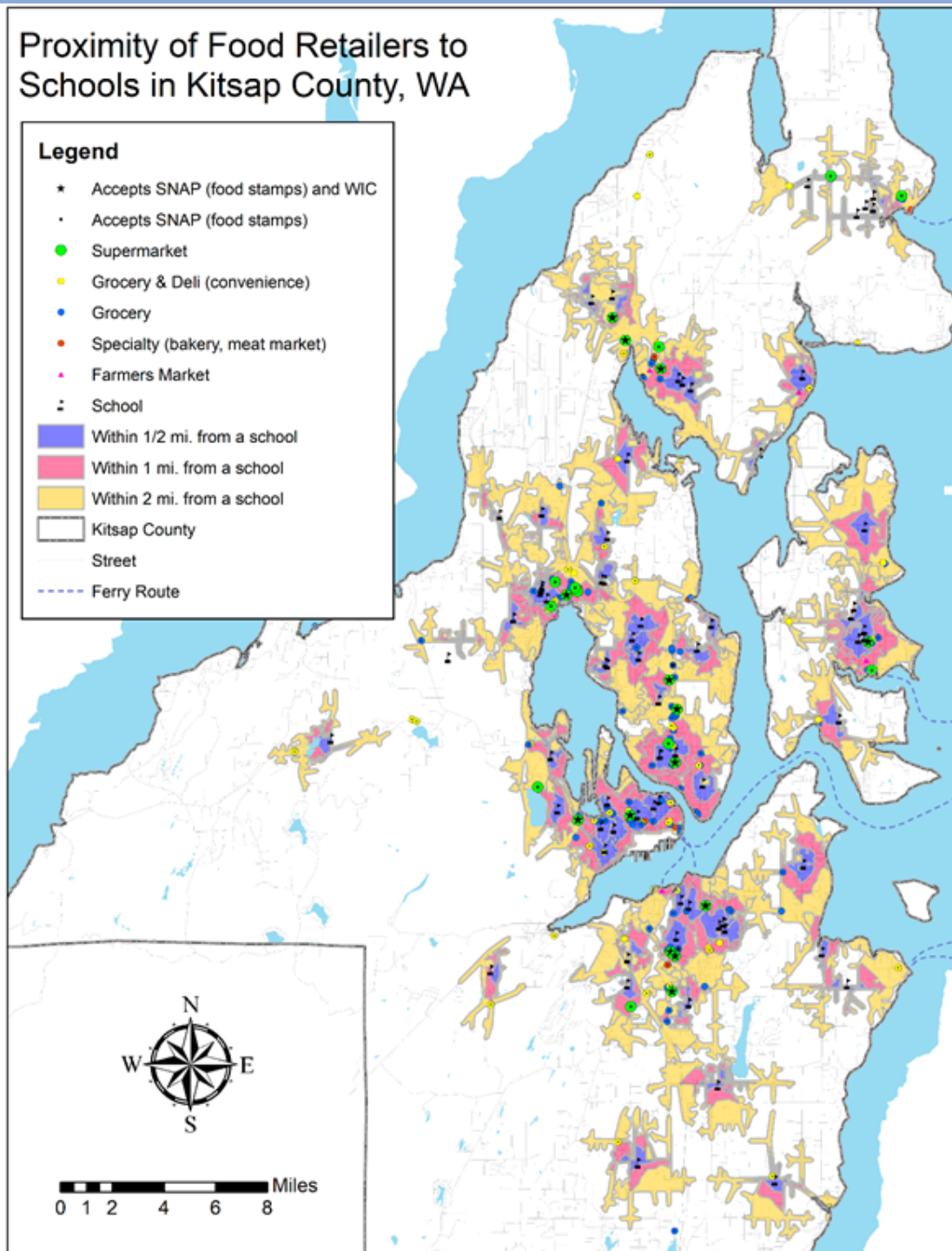
Map 5. Distance from Schools to Nearest Convenience Stores and Supermarkets in Kitsap County, WA



Note: Displayed food establishments include all those with KPHD public health permits.

Map 6 shows Kitsap food retailers and ½, 1, and 2-mile buffer zones around Kitsap schools in purple, pink, and yellow, respectively.

Map 6. Proximity of Food Retailers to Schools in Kitsap County, WA



Note: Displayed food establishments include all those with KPHD public health permits.

Economics of Food

There are two federal food assistance programs available to assist individuals and households who are food insecure. The Supplemental Nutrition Assistance Program (SNAP) and the Women, Infants, and Children (WIC) programs assist low-income families and their children to purchase food through an electronic benefits transfer (EBT) card or a WIC check. Stores licensed to accept SNAP and WIC are reimbursed fully for customer purchases using these payment methods³.

Currently, there are 245 retailers who accept SNAP and 58 retailers who accept WIC. As of 2018, there are 43,543 people enrolled in SNAP (16% of total Kitsap population) and 7,745 people enrolled in the WIC program (3% of total Kitsap population). These numbers reflect only the number of individuals enrolled in the programs and not the total number of individuals who may be eligible.

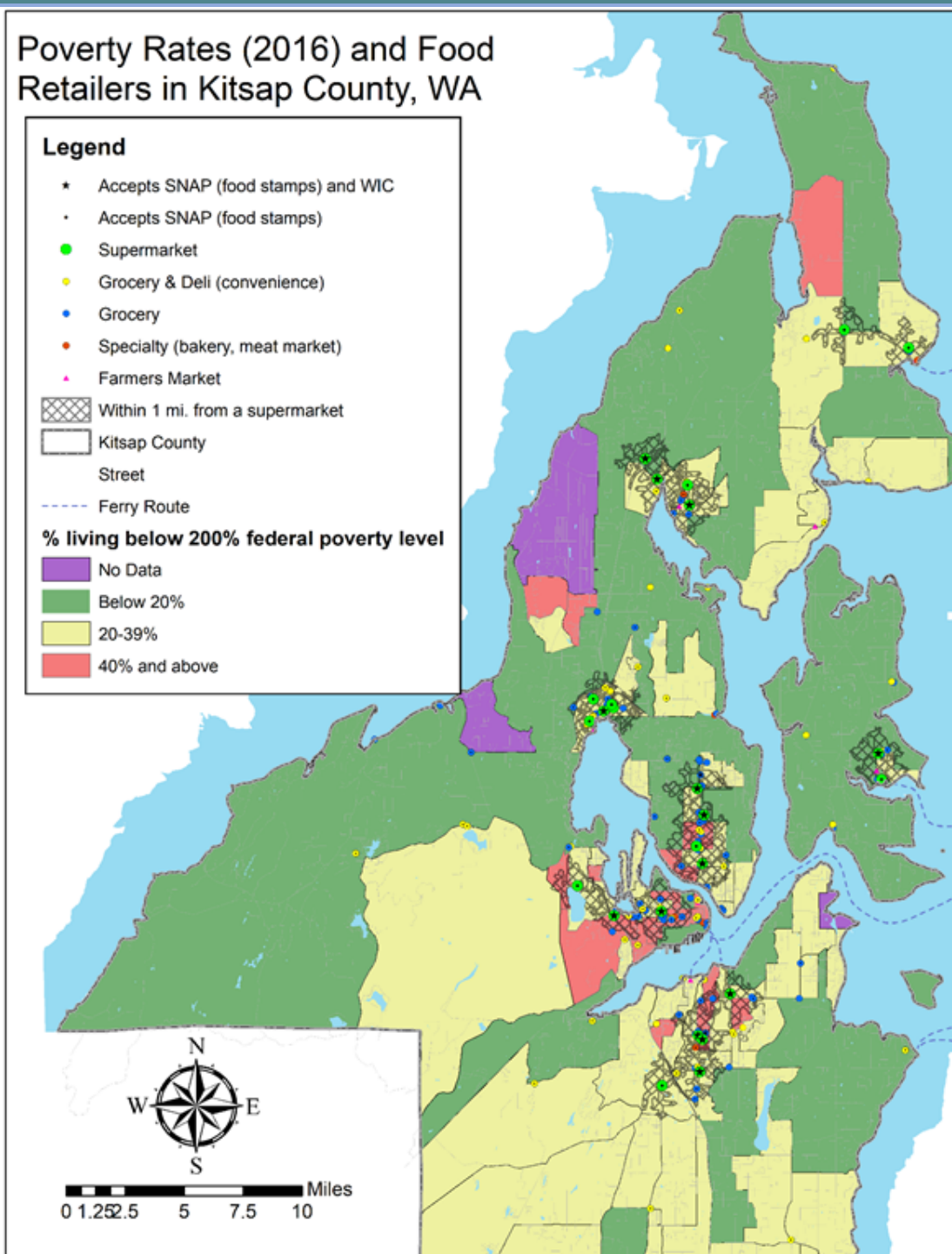
As calculated by Map the Meal Gap, the 12.4% food insecurity rate for Kitsap is above the 12.0% Washington state average, but below the 12.9% national average. Among these 31,280 individuals, only 38% are above the SNAP, Other Nutrition Programs threshold of 200% while 62% fall below this threshold. The average Kitsap meal costs \$3.19, 6% higher than the state (\$3.01) and national (\$3.00) average.⁴

Map 7 illustrates the percent of Kitsap residents living below 200% of the federal poverty levels overlaid by food retailers and 1-mile buffer zones around supermarkets. Of the 165 Kitsap census tracts with available data, 56.4% of the tracts have at least a 20% poverty rate, 13.9% of the tracts at least 40% poverty rate, and 7.3% of the tracts have at least 50% of the population living below 200% of the federal poverty level.

³ http://www.burienmedia.org/docs/PlanningCommission2012_02_14/foodAccess.pdf. Food Landscape in Burien report. 2011.

⁴ <http://map.feedingamerica.org/>. Map the Meal Gap. 2016.

Map 7. Poverty Rates (2016) and Food Retailers in Kitsap County, WA



Note: Displayed food establishments include all those with KPHD public health permits.

Prevalence of SNAP Clients

The Supplemental Nutrition Assistance Program (SNAP) provides supplemental nutrition assistance for eligible individuals based on household size and income⁵. Map 8 shows the count of SNAP clients by ZIP code overlaid by the locations of SNAP authorized food retailers.

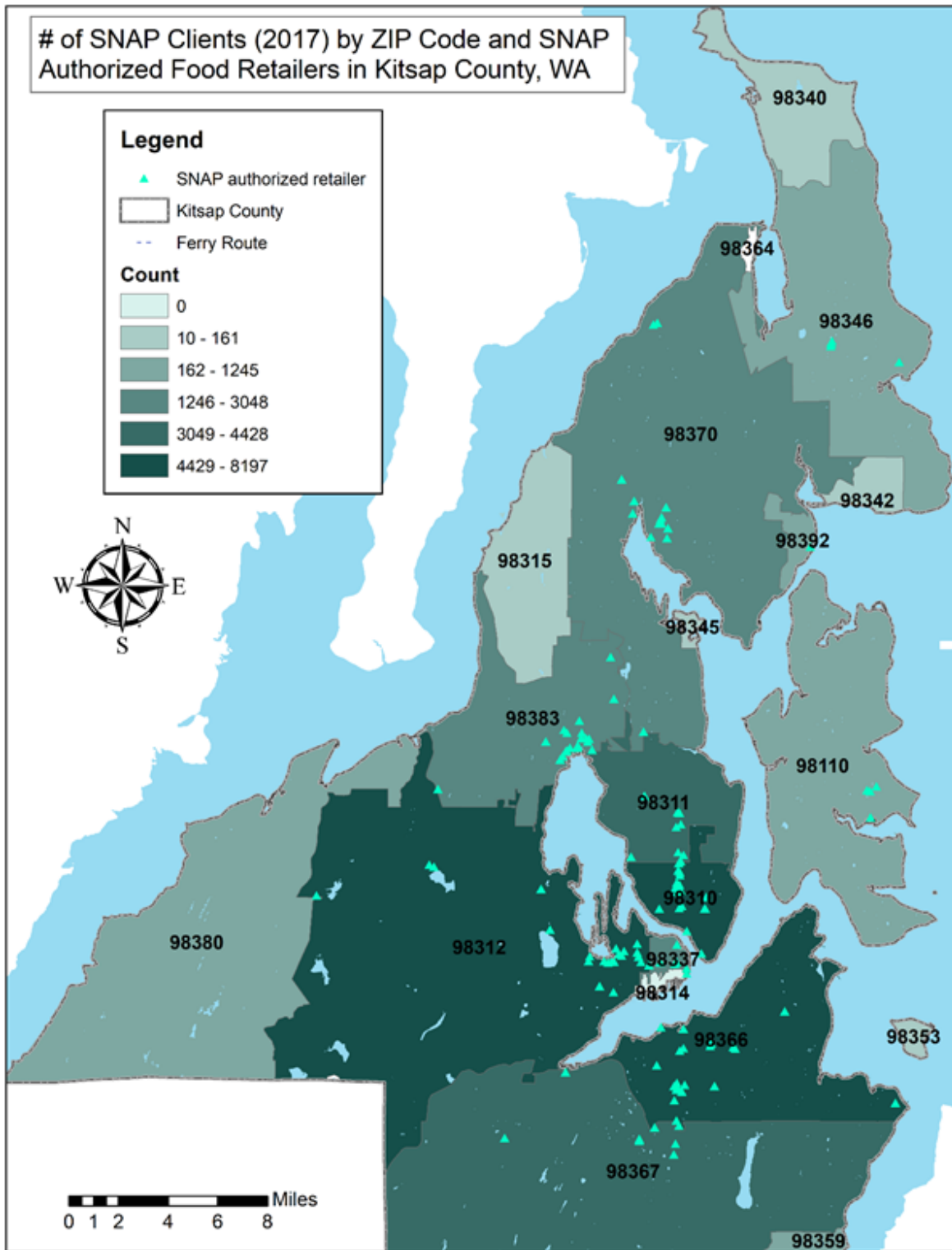
There is a great deal of variation in SNAP clients across Kitsap county. The highest area of SNAP client counts exists in Bremerton (98312 and 98310) at 18.1% and 13.7%, respectively, and Port Orchard / South Park Village (98366) at 16.8%.

Kitsap currently has 245 authorized SNAP retailers across the county, with the highest concentrations in South Park Village (98366) at 16.3%, Bremerton (98312) at 15.9%, and Silverdale (98383) at 13.5%.

Notes that counts of ZIP Codes where SNAP clients number less than 10 are suppressed. Because SNAP client populations are mobile, this data is inherently imprecise and should be interpreted with caution.

⁵ <https://www.fns.usda.gov/snap/eligibility>. SNAP Eligibility. 2018.

Map 8. # of SNAP Clients (2017) by ZIP Code and SNAP Authorized Food Retailers in Kitsap County, WA



Prevalence of WIC Clients

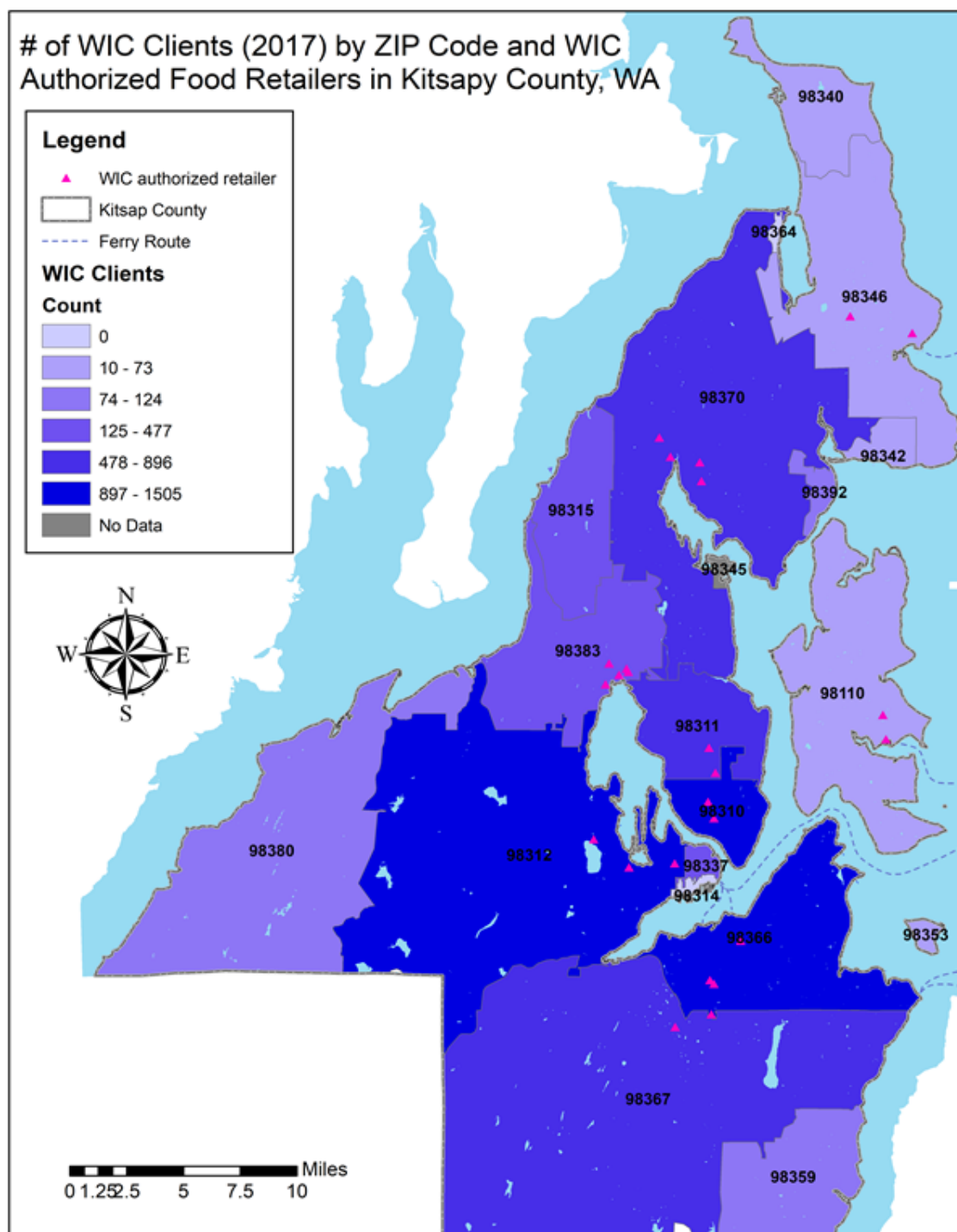
The Women, Infants, and Children Program (WIC) provides supplemental nutrition assistance to pregnant, breastfeeding, and non-breastfeeding postpartum women, infants and children based on categorical, residential, income, and nutrition risk eligibility requirements⁶. Map 9 shows the count of WIC clients by ZIP code overlaid by the locations of WIC authorized food retailers.

There is a great deal of variation in WIC clients across Kitsap count. The highest area of WIC client counts exists in Bremerton (98312 and 98310) at 19.4% and 13.9%, respectively, and South Park Village (98366) at 18.0%. Kitsap currently has 58 authorized WIC retailers across the county, with the highest concentrations in South Park Village (98366) at 32.8%, Poulsbo (98370) at 19.0%, and Silverdale (98311) at 15.5%. There are only six authorized retailers in Bremerton where the largest population of WIC clients reside.

Note that counts of ZIP Codes where WIC clients number less than 10 are suppressed. Because WIC client populations are mobile, this data is inherently imprecise and should be interpreted with caution.

⁶ <https://www.fns.usda.gov/wic/wic-eligibility-requirements>. WIC Eligibility Requirements. 2018.

Map 9. # of WIC Clients (2017) by ZIP Code and WIC Authorized Food Retailers in Kitsap County, WA



Population Density, Poverty Rate and Supermarkets

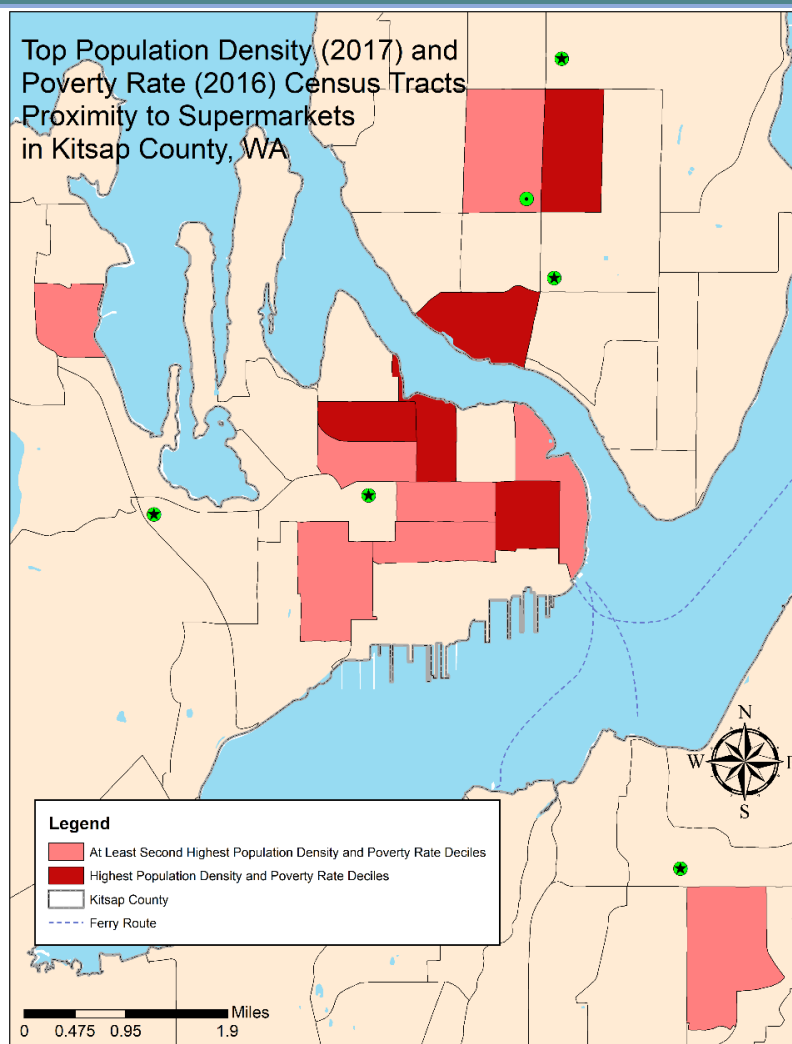
Map 10 depicts overlapping census tracts where both the population density and percent living below the 200% federal poverty level (poverty rate) are at least in the second highest deciles (80%+).

All but one census tract for which the population density and the poverty rate are in at least the second highest decile occur in Bremerton (five in 98337, four in 98312, and three in 98310). The single census tract outside Bremerton occurs in South Park Village (98366).

Just one of these thirteen census tracts have a Supermarket.

Amongst these thirteen census tracts, there are five instances where the highest decile (90%+) for population density and poverty level decile overlap. **None of these census tracts has a supermarket.**

Map 10. Top Population Density (2017) and Poverty Rate (2016) Census Tracts Proximity to Supermarkets in Kitsap County, WA



Note: Displayed food establishments include all those with KPHD public health permits.

Suggested Next Steps

This report provides an initial analysis into the socio-economics of food access and gives an overview of the food landscape of Kitsap County. The data in this report should be used to guide future work to address key findings, including the possibility to:

- Add a transit layer to each map to see if bus transportation lines run along roads with supermarkets and other stores that might have healthy food options and who also offer SNAP and WIC benefits.
- List out convenience stores within ½ mile to schools and residential areas and conduct a healthy corner store assessment.
- Work to increase the number of authorized WIC retailers in zip codes with a high number of WIC clients.
- Disseminate findings to elected officials, social service community partners, and others working to address hunger and poverty.
- Eliminate documented food deserts by working with elected officials and planners to identify opportunities for the establishments of new supermarkets.
- Review local policy and regulatory frameworks (e.g. school food policy, local planning and zoning regulations, and other standards) to understand land-use barriers and gaps to household food security.
- Increase opportunities for healthy eating and active living throughout the County to address the BMI data.
- Focus on creating a culture of health with schools, youth, parents, and families.

Data Sources

The Food Landscape in Burien, WA: Kara E. Martin, Urban Food Link with Branden Born and Eva Ringstrom, Northwest Center for Livable Communities and Amalia Leighton, SvR Design (October 2011)

Kitsap County food retailers with public health permits: Kitsap Public Health District Geographic Information System (KPHD GIS, 2018)

Kitsap County food retailers accepting Supplemental Nutrition Program (SNAP) (formerly food stamps): United States Department of Agriculture (USDA, 2018)

Kitsap County food retailers accepting Women, Infants, Children (WIC) checks: Department of Health (DOH, 2018)

Kitsap County retail food environment index: American Community Survey Business Patterns (ACS BP, 2016)

Kitsap County land use: Kitsap County GIS (KC GIS, 2017)

Kitsap County street network: Kitsap Public Health District GIS (KPHD GIS 2017)

Kitsap County SNAP client count: Department of Social and Health Services (DSHS, 2017)

Kitsap County WIC client count: Department of Health (DOH, 2017)

Kitsap County waterbodies: Kitsap Public Health District GIS (KPHD GIS, 2017)

Kitsap County cities: Kitsap Public Health District GIS (KPHD GIS, 2017)

Kitsap County boundaries: Kitsap Public Health District GIS (KPHD GIS, 2017)

Kitsap County ZIP codes: Kitsap Public Health District GIS (KPHD GIS, 2017)

Kitsap County school sites: Kitsap Public Health District GIS (KPHD GIS, 2017)

Kitsap County ferry routes: Washington State Department of Transportation (WSDOT, 2017)

Kitsap County adult BMI: Behavioral Risk Factor Surveillance System (BRFSS, 2012-2016 5-year estimate)

Kitsap County poverty levels: U.S. Census Bureau ACS (ACS 2012-2016 5-year estimate)